

**CLAIMS**

What is claimed is:

- 1 1. A method for translating a customer address of a  
2 first data packet to a carrier address of a  
3 second data packet, wherein the customer address  
4 corresponds to a location in a customer network  
5 and the carrier address corresponds to a  
6 location in a carrier access network that  
7 provides access to the customer network, the  
8 method comprising:  
9 receiving the first data packet at a  
10 carrier access network, wherein the  
11 first data packet comprises a first  
12 header containing customer source  
13 information and customer destination  
14 information; and  
15 swapping the customer source information  
16 and the customer destination  
17 information in the first header with  
18 carrier assigned source information  
19 and carrier assigned destination

20 information to form the second data  
21 packet, wherein the second data packet  
22 comprises a second header containing  
23 the carrier assigned source  
24 information and carrier assigned  
25 destination information.

- 1 2. The method of claim 1, further comprising:  
2 restoring the customer source information  
3 and the customer destination  
4 information in the first header so as  
5 to recover the first data packet.
- 1 3. The method of claim 1, wherein the customer  
2 address is a shared storage network address.
- 1 4. The method of claim 1, further comprising the  
2 step of:  
3 processing the second data packet within  
4 the carrier access network according  
5 to the second header containing the  
6 carrier assigned source information

7                   and    carrier    assigned    destination  
8                   information.

9    5.    The method of claim 1, further comprising:  
10               storing the second data packet in a shared  
11               storage network.

1    6.    The method according to claim 1, wherein the  
2               customer network comprises a shared storage  
3               network accessible by one or more customers, and  
4               the one or more customers send a plurality of  
5               the first data packets to the shared storage  
6               network over the carrier access network, the  
7               method further comprising:

8               separating the second data packet by  
9               customer.

1    7.    An apparatus for translating a customer address  
2               of a first data packet to a carrier address of a  
3               second data packet, wherein the customer address  
4               corresponds to a location in a customer network  
5               and the carrier address corresponds to a  
6               location in a carrier access network that

7 provides access to the customer network, the  
8 apparatus comprising:  
9 an address translation node for receiving  
10 the first data packet at a carrier  
11 access network, wherein the first data  
12 packet comprises a first header  
13 containing customer source information  
14 and customer destination information;  
15 and  
16 a first address translation module for  
17 swapping the customer source  
18 information and customer destination  
19 information in the first header with  
20 carrier assigned source information  
21 and carrier assigned destination  
22 information to form the second data  
23 packet, wherein the second data packet  
24 comprises a second header containing  
25 the carrier assigned source  
26 information and the carrier assigned  
27 destination information.

1 8. The apparatus of claim 7, further comprising:

2 a second address translation module for

3 restoring the customer source

4 information and the customer

5 destination information in the first

6 header to recover the first data

7 packet.

1 9. The apparatus of claim 7, wherein the customer

2 address is a shared storage network address.

1 10. The apparatus of claim 7, further comprising:

2 a processing module to process the second

3 data packet within the carrier access

4 network according to the second header

5 containing the carrier assigned source

6 information and carrier assigned

7 destination information.

8 11. The apparatus of claim 7, further comprising:

9 a storage module for storing the second

10 data packet in a shared storage

11 network.

1 12. The apparatus according to claim 7, wherein the  
2 customer network comprises a shared storage  
3 network accessible by one or more customers, and  
4 the one or more customers send a plurality of  
5 the first data packets to the shared storage  
6 network over the carrier access network, the  
7 apparatus further comprising:

8 a separating module for separating the  
9 second data packet by customer.

1 13. A method for translating a storage network  
2 address of a first data packet to a carrier  
3 address of a second data packet, wherein the  
4 storage network address corresponds to a storage  
5 location in a storage network and the carrier  
6 address corresponds to a location in a carrier  
7 access network that provides access to the  
8 storage network, the method comprising:  
9 receiving the first data packet at a  
10 carrier access network, wherein the  
11 first data packet comprises a first  
12 header containing first source

13 information and first destination  
14 information; and  
15 encapsulating the first data packet within  
16 the second data packet, wherein the  
17 second data packet comprises a second  
18 header containing second source  
19 information and second destination  
20 information.

1 14. The method of claim 13, further comprising:  
2 removing the first data packet from the  
3 second data packet so as to restore  
4 the first data packet and first header  
5 containing the first source  
6 information and the first destination  
7 information.

1 15. The method of claim 13, wherein the storage  
2 network address is a shared storage network  
3 address.

1 16. The method of claim 13, further comprising the  
2 step of:

3           processing the second data packet within  
4           the carrier access network according  
5           to the second header containing the  
6           second source information and second  
7           destination information.

8   17. The method of claim 13, further comprising:

9           storing the second data packet in a shared  
10          storage network.

1   18. The method according to claim 13, wherein the  
2          storage network comprises a shared storage  
3          network accessible by one or more customers, and  
4          the one or more customers send a plurality of  
5          the first data packets to the shared storage  
6          network over the carrier access network, the  
7          method further comprising:

8          separating the second data packet by  
9          customer.

1   19. An apparatus for translating a storage network  
2          address of a first data packet to a carrier  
3          address of a second data packet, wherein the



4 storage network address corresponds to a storage  
5 location in a storage network and the carrier  
6 address corresponds to a location in a carrier  
7 access network that provides access to the  
8 storage network, the apparatus comprising:  
9 an address translation node for receiving  
10 the first data packet at a carrier  
11 access network, wherein the first data  
12 packet comprises a first header  
13 containing first source information  
14 and first destination information; and  
15 an encapsulation module for encapsulating  
16 the first data packet within the  
17 second data packet, wherein the second  
18 data packet comprises a second header  
19 containing second source information  
20 and second destination information.

1 20. The apparatus of claim 19, further comprising:  
2 a removal module for removing the first  
3 data packet from the second data  
4 packet so as to restore the first data  
5 packet and first header containing the

6 first source information and the first  
7 destination information.

1 21. The apparatus of claim 19, wherein the storage  
2 network address is a shared storage network  
3 address.

1 22. The apparatus of claim 19, further comprising:  
2 a processing module to process the second  
3 data packet within the carrier access  
4 network according to the second header  
5 containing the second source  
6 information and second destination  
7 information.

8 23. The apparatus of claim 19, further comprising:  
9 a storage module for storing the second  
10 data packet in a shared storage  
11 network.

12 24. The apparatus according to claim 19, wherein the  
13 storage network comprises a shared storage  
14 network accessible by one or more customers, and

1       the one or more customers send a plurality of  
2       the first data packets to the shared storage  
3       network over the carrier access network, the  
4       apparatus further comprising:

5             a separating module for separating the  
6             second data packet by customer.